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Research Paper

Evaluation of new herbicides for weed management in chickpea (*Cicer arietinum* L.)

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ABSTRACT

A field experiment was conducted on medium black soil at Instructional Farm, Junagadh Agricultural University, Junagadh during the *Rabi* season. The experiment comprising of twelve weed management treatments was conducted in a randomized block design with four replications. The results revealed that the highest mean seed (2937 kg ha^{-1}) and stover (3215 kg ha^{-1}) yields were recorded under conventional methods involving manual weeding and interculturing as and when required. The herbicidal treatments involving fluchloralin (0.675 kg ha^{-1}) or oxyfluorfen (0.120 kg ha^{-1}) as pre-emergence supplemented by post-emergence application of imazethapyr (0.050 kg ha^{-1}) at 30-35 DAS were also found equally effective. Significantly higher values of growth characters and yield attributes *viz.*, plant height, plant spread, number of branches per plant, number of pods per plant, number of seeds per pod, number of root nodules per plant and seed weight per plant were recorded with these treatments. However, test weight was not significantly influenced by various weed control treatments. Hand weeding and interculturing as and when required (weed free treatment), oxyfluorfen (0.120 kg ha^{-1} pre-eme.) with 1 hand weeding and interculturing at 30-35 DAS, fluchloralin (0.675 kg ha^{-1}) or oxyfluorfen (0.120 kg ha^{-1}) as pre-emergence supplemented by post-emergence application of imazethapyr (0.050 kg ha^{-1}) at 30-35 DAS established their superiority over rest of the treatments in keeping down weed population (*viz.*, sedge, monocot and dicot), weed biomass with higher weed control efficiency. Application of fluchloralin (0.675 kg ha^{-1}) or oxyfluorfen (0.120 kg ha^{-1}) as pre-emergence supplemented by post-emergence application of imazethapyr (0.050 kg ha^{-1}) at 30-35 DAS recorded lower weed index and higher herbicide efficiency index. Among all treatments tried in this experiment manual weeding and interculturing as and when required was found to be best and profitable by recording maximum net realization of Rs. 45384 ha^{-1}. This was closely followed by oxyfluorfen at 0.120 kg ha^{-1} (Rs. 42517 ha^{-1}) or fluchloralin at 0.675 kg ha^{-1} (Rs. 40820 ha^{-1}) as pre-emergence supplemented by post-emergence application of imazethapyr at 0.050 kg ha^{-1}.

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Key words : Weed management, Herbicides, Oxyfluorfen, Fluchloralin

INTRODUCTION

Chickpea (*Cicer arietinum* L.) is world's important pulse crop occupying third position among pulses. Among a dozen of different grain legumes under cultivation in India, chickpea is the leading crop and is grown in *Rabi* season. Indian subcontinent accounts for 67 per cent of production of chickpea in the world. Indian farmers pay reasonable attention to cultivation, especially in respect of seed bed preparation, manuring and irrigation. Crop yield losses due to weeds have been estimated to range from 30 to 50 per cent (*Singh et al.,* 1985; *Balayan*, 1987). However, sufficient attention has not been paid to weed control aspect which remains one of the constraints in boosting up the gram production.

In view of the paucity of adequate research on integrated weed management in the chickpea crop, the present investigation was undertaken.

MATERIALS AND METHODS

The experiment was laid out in Randomized Block Design with four replications. The treatments were assigned at random to each experimental plot in each replication at Instructional Farm, Department of Agronomy, College of Agriculture, Gujarat Agricultural